

“What has been disclosed is a concept more in the realm of speculation and conjecture than the reduction of an idea to a practical application based on science and technology.”

In further support of this rejection, the Examiner quotes a passage from the U.S. Supreme Court Decision Brenner v Manson, 148 USPQ 689, 696 (US SupCt 1966).

The above Supreme Court Decision has been studied, but its relevancy to the facts of the present application is not at all understood. That decision involved the patentability of a chemical process for producing a known chemical compound. However, the utility of such a chemical compound had not been established, except for the fact that the compound belonged to a class of compounds which scientists were screening for possible use. A new chemical compound clearly is not patentable under 35 USC 101 until there is a showing of some utility for the compound. The Brenner decision held that the requirement for utility under 35 USC 101 was not satisfied by a showing that the produced compound belonged to a class of compounds which scientists were then screening for possible use (pp. 532, 536).

The present invention, on the other hand, is directed to a method and apparatus for inhibiting or weakening the formation of hurricanes. As well known, particularly by those residing in areas susceptible to hurricanes (which is the case with the present Applicant who resides in Long Key, Florida), hurricanes cause immeasurable property damage and loss of lives. For example, the following is a quotation from the Encyclopedia Britannica, volume 16, page 521;

“Hurricanes can cause widespread destruction and human misery. An average hurricane has tremendous energy. In one day the energy released is about  $1.6 \times 10^{13}$  kilowatt-hours, or at least 8,000 times more than the electrical power generated each day in the United States. This quantity is equivalent to a daily explosion of 500,000 atomic bombs of 20-kiloton Nagasaki variety. These numbers should make it clear that it

would be impractical to attempt to modify hurricanes by a brute force approach. It is necessary to find a means whereby a small input of energy may upset a natural instability and lead to large results. Ice-nuclei seeding is the one such approach now under investigation”

It is hard to conceive of any development that would have more utility than a method and apparatus for inhibiting, or at least weakening, the formation of hurricanes, which is the object of the present invention.

As will be more particularly discussed below, the present invention proposes another means, consistent with recognized understandings of physical phenomena, whereby a relatively small input of energy upsets a natural instability and leads to large results, namely the inhibition, or at least the weakening, of the formation of a hurricane. The amount of additional energy needed (i.e., the amount of cooling of the surface water that would be required) to effectively inhibit, or at least weaken, the formation of a hurricane, would depend to a large extent on how early the onset of the hurricane is detected, in the same manner that a forest fire can be inhibited or weakened by a relatively small input of energy if the fire is detected early.

As will be shown more particularly below, the basic operations of the novel method are capable of practical application in today’s state of science and technology, and are not merely in the realm of speculation and conjecture as indicated by the Examiner.

Thus, Claim 1 defines the broad novel concept of the present invention, namely, a method of inhibiting or weakening (emphasis added) the formation of hurricanes, comprising the operations of (a) detecting the onset of a hurricane in a region of open water; and (b) immediately cooling the surface water in the open water region.

The Inventor, who is a retired physician and presently lives in Long Key, Florida where he has personally experienced hurricanes, is well aware of the

devastation caused by hurricanes. He has prepared material discussing the present state of the art applicable to both the possibility of detecting the onset of a hurricane, and the possibility of immediately cooling the surface water in order to inhibit, or at least weaken, the formation of the hurricane. Enclosed, as an Attachment, is a copy of this material prepared by the Inventor, together with a copy of each of the references cited in the attachment.

It is believed that this attachment, and particularly the references cited therein, clearly show that both of the operations defined in method Claim 1 are capable of being achieved in the present state of the art and do not violate any recognized understandings of the physical phenomena involved.

It is submitted, therefore, that Claim 1, as well as all of the other claims present in the application, are patentable under 35 USC 101.

**The Rejection under 35 USC 112, first paragraph**

35 USC 112, first paragraph, relates to the completeness of the description of the invention, and requires that the description be sufficient “to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the Inventor of carrying out his invention”.

It is submitted that the description in the present application is sufficient to meet the “enabling” requirement, as well as the “best mode” requirement, of 35 USC 112, first paragraph.

Thus, the specification describes, not only the main novel concept of the present invention, but also specific implementations of the novel concept.

As indicated above, the main novel concept of the invention as defined, e.g., in Claim 1 is to inhibit, or at least weaken, the formation of hurricanes by the

following operations: (a) detecting the onset of a hurricane in a region of open water; and (b) immediately cool the surface water in the open water region.

With respect to operation (a), it is believed the Examiner will agree that, with today's sophisticated technology regarding heat sensors and geographical location of objects by means of satellites (e.g., as briefly reviewed in the accompanying Attachment prepared by the Inventor), it is possible to locate, rapidly and with a high degree of precision, the surface water temperature of large bodies of water, the air pressure thereover, and the velocity and direction of winds, such as to indicate the possible onset of a hurricane. It would, of course, be critical to identify the onset of a hurricane as early as possible, and its location as precisely as possible, since the amount of energy needed to inhibit or weaken the hurricane formation would greatly depend on such determinations.

With respect to operation (b), the specification describes specific manners of implementing the cooling operation by using nuclear-powered submarines. Such submarines may be used to cool the surface water by pumping the cooler water, at the depth of the open water region, to the surface of the open water region. Since the water in depth is considerably cooler than the water at the surface, such pumping will inherently cool the surface water. In fact, this is the technique used in the method for weather modification described in Bronicki et al., U.S. Patent 4,470,544, cited by the Examiner as of interest. Since that patent is not concerned with inhibiting or weakening the formation of hurricanes, it does not include the step of detecting the onset of a hurricane: clearly, therefore, that patent is not relevant to the present invention except for showing that surface water can be cooled by pumping depth water to the surface.

The specification in the present application not only discloses the broad use of nuclear-powered submarines for cooling the surface water, but also describes three possible arrangements that may be used, namely: Fig. 1 showing a single submarine, Fig. 2 showing a plurality of submarines deployed horizontally over a large area of the open water region, and Fig. 3 showing a plurality of such submarines deployed vertically at different depths of the open water region. Any one of these three configurations might be the "best mode" for a particular situation, depending on how early the onset of a hurricane can be identified and located, and how much cooling may be required to weaken or inhibit the formation of the hurricane. Since nuclear submarines are presently available in relatively large numbers, are extremely mobile, and are capable of generating tremendous amounts of energy for long periods of time, it would appear that the broad object of the present invention -- to inhibit, or at least weaken, hurricane formation -- could be implemented in this manner. At least there is no showing of any reason why such an implementation would not work.

On page 4 of the Official Action, the Examiner defines the standard for enablement as follows:

"The standard for enablement is whether a person skilled in the art would have sufficient information from the application disclosure to make and use the claimed invention without undue experimentation."

The Examiner then set forth seven reasons why, in his opinion, undue experimentation would be necessary in this case in order to use the disclosed process.

We discuss below each of the seven reasons set forth by the Examiner:

1. "The claimed invention is broad and sweeping in scope"

In this respect, it is to be pointed that Claim 1 defines a “method of inhibiting or weakening the formation of hurricanes”. That is to say, the claim covers the possibility of at least weakening the hurricane. It is clear that cooling of the surface water in accordance with the present invention will inherently have some affect in reducing the initial energy fed into the hurricane at its early stages, as well as reducing the new energy fed into the hurricane as it increases in intensity. It is reasonable to expect, therefore, that this will inherently reduce, to some degree, the infeed of new energy and thereby the intensity of the hurricane, since, as pointed out in, e.g., References 1 and 3 in the Attachment by the Inventor, hurricanes tend to dissipate when moving over colder water

2. “The nature of the invention is that of a large-scale environmental change”

In this respect, we again refer to the above-quoted passage from the Encyclopedia Britannica, and point out that the present invention, like the ice-nuclei seeding technique referred to in that passage, does not represent a “brute force” approach for inhibiting or weakening hurricanes, but rather a somewhat “elegant” approach whereby a small input of energy upsets a natural instability and leads to large results.

3. “The state of the prior art offers no reasonable background from which to judge the feasibility of the invention”

If there is no such prior art, this is because the problem of hurricanes, as devastating as it has been throughout history, has not yet been solved or even mitigated to any significant extent. However, the above discussion, and particularly the references cited in the Attachment prepared by the Inventor, support a conclusion

that the object -- to inhibit or at least weaken a hurricane formation -- is attainable by the present invention in the present state of the art. At least, there has been no showing or indication that the proposed method violates any recognized physical principle or is otherwise incapable of being achieved by the present state of science and technology.

4. "The level of one of ordinary skill in this art is best characterized as that of a theoretical scientist dealing in probabilities and possibilities rather than that of an engineer dealing in practical applications of technology"

Applicant would question the correctness of this statement. In Applicant's opinion, the theory on which the present invention is based is clear and consistent with recognized principle of physics, and therefore could be implemented by an engineer dealing in practical applications of existing technology.

5. "The outcome of the disclosed concept is entirely unpredictable"

Again it is to be emphasized that the invention purports to at least weaken the formation of a hurricane. It is believed that the Attachment by the Inventor, particularly the cited references, clearly supports an expectation that the method could at least weaken a hurricane to some extent. It is submitted that this is all that is required under 35 USC 101.

6. "The application is devoid of working examples"

A demonstration of the invention or providing working examples would require facilities, funds and manpower far in excess of what is available to an individual inventor, such as the inventor in the present application. However, it is

believed that neither a demonstration nor working examples is required in this case in the absence of some showing or indication how the object of the invention (e.g., at least “weakening” the formation of a hurricane), is not attainable by the method described in the present application or is otherwise inconsistent with recognized principles of physics.

7. “The quantity of experimentation needed to use the invention based on the content of the disclosure can only be characterized as astronomical considering the lack of background information, past experimentation, and specific detail”

While the energy that would be required to suppress a raging hurricane would indeed be “astronomical”, the energy required merely to “weaken” to some extent the hurricane formation would not be astronomical if this energy is applied immediately after the onset of a hurricane has been detected. As noted above, the proposed method is not a “brute force” approach, but rather another “elegant” approach (such as the ice-nuclei seeding technique referred to in the above quotation from the Encyclopedia Britannica) whereby a small input of energy may upset a natural instability and lead to large results. It is believed that the above material, particularly the citations in the enclosed Attachment by the Inventor, provides the background and past experimentation information from which one skilled in the art could reasonably expect that a hurricane formation could at least be weakened in accordance with the described method.

In the absence of some showing or indication that the method proposed by the invention violates some recognized physical principle, or for some other reason is incapable, in the present state of science and technology, of achieving the objects of the invention (to inhibit or to at least weaken hurricane formation), it is not believed essential under 35 USC 101 to require an actual demonstration of the operability of



the invention. Such a demonstration would require facilities, funds and manpower capable of being assembled only by an extremely large organization, and certainly not by an individual inventor.

### CONCLUSIONS

For the foregoing reasons, it is submitted that the specification in the present application meets both the "enabling requirement" and the "best mode requirement" of 35 USC 112, second paragraph, as well as the utility requirement of 35 USC 101.

Since the application otherwise appears to be in condition for allowance, an early Notice of Allowance is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Benjamin J. Barish", written in a cursive style.

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